

HAEMOPERITONEUM DUE TO RUPTURE OF A CORPUS LUTEUM

by

MAHENDRA N. PARIKH, M.D. (Bom.), D.A. (C.P.S.),
Resident Medical Officer,

Nowrosjee Wadia Maternity Hospital, Parel, Bombay-12.

A ruptured ectopic gestation is so generally the cause of intraperitoneal haemorrhage of gynaecological origin that other well-known causative lesions are often not thought of until they unexpectedly present themselves at laparotomy. Rupture of a corpus luteum is one of these neglected conditions. Recently, we came across two cases of corpus luteum rupture, in both of which the pre-operative diagnosis was ruptured ectopic gestation and in neither of which was corpus luteum rupture thought of, pre-operatively, as a possible causative lesion. This prompted a search for more cases from the hospital records and stimulated this study of the subject.

Although Nelaton was aware of the possibility of haemorrhage from a ruptured Graafian follicle as early as 1851 and Lawson Tait performed his first laparotomy for a ruptured ectopic gestation as early as 1883 (Masani), it was not till 1905 that the finding of a ruptured ovary at operation was reported for the first time by H. W. Wilson. Greenhill, in 1930, was the first to report a case of ruptured corpus luteum which was correctly diagnosed before operation. However, in his case, the diagnosis was rather easy as the corpus luteum cyst had ruptured

during a bimanual vaginal examination. Meigs and Hoyt reported a correct pre-operative diagnosis in 4 out of their 19 cases, Taniguchi and Killenny in one out of their 19 cases and Dempsey in one out of his 3 cases. A correct pre-operative diagnosis was not made even once in the series of cases presented by Moore (14 cases including 12 from literature), Phaneuf (23 cases including 22 from literature), R. K. Wilson (4 cases), Johnson (18 cases), Morton (26 cases), Sackett (11 cases), Kretzchmar and Arnell (12 cases), Israel (10 cases), Weil (12 cases), and Pecman (15 cases). None of our five cases was correctly diagnosed before operation. Thus, the chances of diagnosing the condition before operation would appear to be remote. Such is not the case, however, for Hoyt and Meigs reported a correct pre-operative diagnosis in 14 cases out of 46, when the resident officers were on the look out for this condition. The diagnosis of corpus luteum rupture is not very difficult if one is actively aware of the condition. Herein lies the purpose of this review.

Incidence

The incidence of the condition is very difficult to compute. The num-

ber of cases reported so far in the literature is hardly 200. We, recently, saw two cases at the K.E.M. Hospital, Bombay. But a search of the hospital records for the years 1951 to 1958 (both inclusive) yielded only one other case, while at the Nowrosjee Wadia Maternity Hospital, Bombay, only two cases were seen during the last five years (1954 to 1958). The difficulties in computing the incidence are obvious when one realises that only those cases are unquestionable where the diagnosis is established by a histological examination of the ruptured site in the ovary. Thus, cases not submitted to laparotomy must be thoroughly scrutinised before they can be accepted. Secondly, in many mild cases of corpus luteum rupture the diagnosis is missed. If these cases are not submitted to laparotomy, they are completely lost. Hence, as Israel says, many mild cases pass entirely unnoticed.

The condition, however, is not very common for most of the reported series consists of less than 20 cases and even isolated cases are reported.

Lastly, according to Novak, Johnson, Hoyt and Meigs, and Israel, haemorrhage from the corpus luteum is much more frequent than haemorrhage from the Graafian follicle. It must be noted, however, that this refers only to clinically significant haemorrhage.

Etiology and Pathology

In contrast to the rupture of a Graafian follicle, which is a physiological mechanism of ovulation and is rarely accompanied by significant

haemorrhage, the rupture of a corpus luteum is a pathological process and is accompanied by active bleeding. Hyperaemia, active or passive, and trauma are two important etiological factors leading to this pathological process. Though trauma is more strikingly apparent when present, hyperaemia is the more important of the two, for significant trauma is not present in the great majority of the reported cases.

Vascularity is the essence of the transformation of a Graafian follicle into a corpus luteum. The granulosa lutein layer in the corpus luteum contains thin-walled delicate vascular projections which may be easily damaged by excessive hyperaemia or by trauma. Excessive hyperaemia may be physiological due to sexual excitement or pre-menstrual congestion, or may be pathological due to pelvic disease. This damage to the capillary projections in the walls of the corpus luteum results in the formation of a haematoma in the cavity of the corpus luteum. If bleeding from these capillaries persists, intraluminal pressure in the corpus luteum would go on increasing and this would ultimately result in the rupture of the corpus luteum, probably at its weakest point, viz. the stigma. Trauma may be contributory to the rupture of the corpus luteum haematoma. After the corpus luteum has ruptured, intraperitoneal haemorrhage can be caused not only by the initial damage to the capillaries of the granulosa lutein layer but also by the laceration of vessels in the wall of the corpus luteum.

The fact that in most of the cases, rupture of a corpus luteum occurs in

the latter half of its life span points to the importance of hyperaemia in the etiology of rupture. One would however expect that rupture of a corpus luteum should be more common during early pregnancy. However, the number of cases of rupture of a corpus luteum associated with pregnancy is very small. Taniguchi and Kilkenny have reported two cases, while Weil and Sloan have reported one case each, in association with intrauterine pregnancy. Israel, Hedde, and Bissell have each reported a case in association with ectopic pregnancy. Is it likely that a preclinical pregnancy exists in many or at least some of the cases of corpus luteum rupture? We suggest that a uterine curettage should be carried out to exclude or detect a preclinical pregnancy in every case of corpus luteum rupture *not associated with a clinical pregnancy*. This procedure should have no objection, for such an early pregnancy would invariably be blighted by the rupture, destruction, and excision of the corpus luteum.

As already pointed out, trauma may play an etiological role either by initiating a corpus luteum haematoma formation by damaging the capillaries of the granulosa lutein layer or by contributing to the ultimate rupture of a corpus luteum haematoma. Novak, Stuckert, Johnson, Payne, Israel, Sloan, and Taniguchi and Kilkenny have each reported a case where coitus played an etiological role. In one of our cases also, coitus was the etiological factor. Greenhill and Novak have each reported a case where bimanual vaginal examination caused rupture of the corpus luteum. Other instances

of trauma associated with corpus luteum rupture are injury to the lower abdomen (Christopher), lifting of a heavy box (Primrose), and straining at stool (Dansey). Ferguson reports a case wherein there developed, $7\frac{1}{2}$ hours after an operation of supravaginal hysterectomy, signs of internal haemorrhage, which was subsequently found to be due to a ruptured corpus luteum cyst. The offending corpus luteum was noted at the time of hysterectomy and had evidently been injured at the time of operation. Novak has reported cases of corpus luteum rupture occurring during ordinary activities like walking, dancing, and washing clothes. Israel has reported cases occurring while typing, playing tennis and riding an auto. However, in most of the cases trauma of any kind is absent. The role of trauma is difficult to evaluate. It may be pointed out that coitus plays a dual role, for apart from the mechanical trauma inflicted during the sexual act, the accompanying sexual excitement is associated with pelvic congestion and ovarian hyperaemia. It may also be noted that an ovary prolapsed in the pouch of Douglas is more susceptible to the effects of the sexual act.

There was no evidence of trauma in three cases out of our five. In one case coitus was the etiological factor, and in one case the patient was straining at stool when the pain started.

It is obvious that rupture of corpus luteum can occur only during the childbearing age. But, although it can occur at any age during the childbearing life, it is more often

seen in young women. Most of the patients in the series reported by Johnson, Meigs and Hoyt, Kretzschmar and Arnell, and Israel were less than 30 years of age. Only one patient, out of our five, was more than 30 years old.

Boggon and Wrigley, Meigs and Hoyt, Hoyt and Meigs, Israel, Weil, and Taniguchi and Kilkenny all find that the right ovary is more often involved than the left. The offending ovary was on the right side in 4 cases out of our five. There is no reason why the corpora lutea of the right ovary should rupture more often than those in the left ovary. We would like to offer an explanation for a higher incidence on the right side reported by most of the writers. Milder cases of corpus luteum rupture of the right ovary, being misdiagnosed as appendicitis, are very likely to be submitted to laparotomy, and thus brought to light. Whereas milder cases of corpus luteum rupture of the left ovary are most likely to be treated conservatively, the real diagnosis being missed. Being left unoperated for want of a positive diagnosis leading to a laparotomy, many milder cases on the left side are liable to pass unrecognised. We feel that the higher incidence on the right side is, thus, more apparent than real.

Lastly, in spite of some of the etiological factors being repeatedly present, corpus luteum rupture rarely occurs again in the same patient. Taylor's case stands as a solitary instance where corpus luteum rupture occurred twice in the same patient. His patient had a laparotomy for haemorrhage from a

corpus luteum cyst of the right ovary. Eighteen months later she had haemorrhage from a corpus luteum of the left ovary.

Symptoms and Signs

Pain in the lower abdomen is the most important symptom, for besides being the only symptom invariably present in all cases, it is the first symptom. The pain is characteristically sudden in onset and is usually confined to the lower abdomen. Obviously the pain varies much in its intensity.

Symptoms and signs due to blood loss depend on the amount of internal haemorrhage. Fainting attacks are quite common and shoulder pain may also be present. While varying degree of nausea is common, vomiting is usually absent. The bleeding can be severe enough to produce a picture of shock.

On examination, there is tenderness over the lower abdomen, most pronounced on the side of the lesion. Spasm of the recti muscles is frequently absent and, when present, is rarely severe. Rebound tenderness may be elicited. On bimanual vaginal examination there is fullness in the fornices, while sometimes the ovarian haematoma may be palpable as a soft tender tumour. Manipulations of the internal genitals are painful.

A polymorphonuclear leucocytosis, a very high erythrocyte sedimentation rate and a moderate rise of temperature may be present, but are not of diagnostic significance.

Depending on the amount of internal haemorrhage, the cases may be divided into the following groups: (1) massive haemorrhage leading to

shock, (2) moderate bleeding producing signs of peritoneal irritation, and (3) slow bleeding resulting in the formation of a pelvic haematocoele.

The chief symptom in all our 5 cases was pain in lower abdomen. While fainting and vomiting occurred twice, shoulder pain was present only once.

Diagnosis and Differential Diagnosis

It will be seen that there are no symptoms or signs pathognomonic of the lesion. And hence to suspect the condition is the most important step towards its diagnosis. If the diagnosis is not to be missed, one must suspect the condition and try to confirm or exclude it, in every case of acute abdomen in a woman of child-bearing age.

Time relationship in the menstrual cycle is important for that is the only point of clinical differentiation between a haemorrhage from corpus luteum and one from Graafian follicle. Though the rupture of a corpus luteum can occur any time after ovulation, *it is most frequent in the last week of the cycle and during menstruation*. Besides, as found by Weil, haemorrhage from corpus luteum is more often severe than one from Graafian follicle. A histological examination of the endometrium will differentiate the two conditions.

Acute appendicitis and a ruptured ectopic gestation are the two conditions which most often require to be differentiated from a ruptured corpus luteum.

Cases of mild haemorrhage due to ruptured corpus luteum, especially on the right side, are often mis-

diagnosed as acute appendicitis. Whereas, in appendicitis the pain is gradual in onset and is commonly accompanied by vomiting, in corpus luteum rupture the pain is of sudden onset and is rarely accompanied by vomiting. While in the former condition the area of exquisite tenderness is rather definite with maximum tenderness over McBurney's point, in the latter condition the area of tenderness is rather diffuse with maximum tenderness below McBurney's point. Other points of importance, in differentiating the two conditions are that in cases of appendicitis, besides a possible history of previous attacks, rigidity of the recti is more marked and on vaginal examination there is neither a palpable adnexal tumour nor pain on movement of the internal genitals.

A differentiation between a ruptured ectopic gestation and a ruptured corpus luteum is rather difficult. Hoyt and Meigs say that there is no true differential point, while Schumann says that the differentiation is rarely possible save in those cases in which the virginity of the patient is beyond all question. However, abnormal vaginal bleeding may be of diagnostic aid, for whereas vaginal bleeding is often present in ectopic pregnancy, bleeding, not menstrual in type, is almost never present in cases of corpus luteum rupture. The value of a biological pregnancy test need not be stressed. Other points which may aid in the differentiation are a history of missed periods or of regular use of contraceptives, presence of early pregnancy changes in the breasts espe-

cially in a nulliparous patient, and an evidence of enlargement or marked softening of the uterus. It may be added that in some cases of ovarian pregnancy nothing short of a histological examination suffices to reveal the true nature of the condition.

Torsion of an ovarian cyst, endometriosis, salpingitis and intestinal perforation are some of the other conditions which may require consideration in the differential diagnosis.

Four patients out of our five, were diagnosed as ruptured ectopic gestation and the remaining one as peritonitis.

Dual Lesions

It is interesting to note and worthwhile to remember that dual lesions can occur. There are some cases reported, wherein, coexistent with the ruptured corpus luteum there was present a second pathological lesion. Hoyt and Meigs, O'Gorman, and Taniguchi and Kilkenny have each reported a case of corpus luteum rupture accompanied by acute appendicitis. Israel, Hedde, and Bissell have reported one case each of corpus luteum rupture associated with a tubal pregnancy. Greenhill's case had a haematosalpinx besides the ruptured corpus luteum and one of our patients also had these two lesions.

Treatment

The formation of a corpus luteum haematoma is, probably, very common. In the great majority of instances, however, the corpus luteum haematoma undergoes resorption without giving rise to any significant

symptoms or signs. In a small number of cases the haematoma ruptures giving rise to a clinically recognisable picture. But, if the bleeding is slight, even the rupture may remain unnoticed. Even with a moderate amount of haemorrhage, the bleeding may stop spontaneously and thereafter a complete recovery is possible without resort to surgery. Meigs and Hoyt concluded that in certain of their cases operation could have been avoided, there being no more any active bleeding at operation. Hoyt and Meigs state that in many cases the ovary required no treatment at operation. Taniguchi and Kilkenny found that in several cases the bleeding had ceased when the abdomen was opened. Pratt describes three cases treated expectantly with good results. Thus, *every case of corpus luteum rupture does not necessarily need operative treatment* and certain cases could be adequately treated conservatively, and spared a surgical intervention. This fact alone is enough to convince one of the great importance of a correct pre-operative diagnosis.

Conservative treatment, however, has its own danger. Sackett describes a case which was diagnosed as ruptured corpus luteum, treated conservatively and discharged from the hospital, only to return three weeks later when a laparotomy brought to light a ruptured ectopic gestation. Such happenings are possible and one should not consider conservative treatment without realising its limitations. Watchful waiting should be restricted to those cases where the amount of internal bleeding is mild, or moderate and where the diagnosis

of corpus luteum rupture is so certain that acute appendicitis and ectopic pregnancy can be definitely excluded. Further, this non-operative treatment should be flexible and give way to surgical intervention if indicated by progression of the symptoms and signs. Lastly, in the light of Sackett's case we consider it advisable to follow up these patients carefully for at least some weeks if they are discharged without a laparotomy. It must also be added that a biological pregnancy test is of great value during the conservative management.

Cases which have marked internal bleeding or in which the diagnosis is not definite should be submitted to a laparotomy. The shock due to blood loss must, of course, receive due attention before, during and after the operation. Conservatism in the handling of the bleeding ovary cannot be overemphasized. Though proper control of the bleeding is the aim, absolute minimum removal, if at all, of the ovarian tissue, should be the guiding principle. A small rent in the wall of the corpus luteum needs no more than mere suturing. A large haematoma in the corpus luteum may necessitate a partial resection of the ovary. Rarely, when most of the ovary is involved in the formation of an organising haematoma, nothing short of an oophorectomy may prove adequate to control the bleeding.

In our series, one patient needed suturing of the bleeding edges, one needed partial oophorectomy, one underwent oophorectomy which might have been avoided, one required oophorectomy with salpingec-

tomy for the haematosalpinx, and the remaining one was submitted to the removal of the uterus along with the appendages on one side as the broad ligament showed haematoma and tears.

Prognosis

With the present day advances in blood transfusion, anaesthesia, and antibiotic therapy there should be no mortality if the patient is treated promptly and properly. Even way back in 1928, Simon reported 30 operated cases of corpus luteum haemorrhage, with no mortality, the amount of bleeding varying from 1/2 litre to more than 1 litre in 14 of them. Most of the reported series are without a mortality. All our five patients survived.

Case 1: (K.E.M.H. 58/13917). Mrs. B. V., aged 24 years and married for 7 weeks, was admitted in the surgical ward on 29-6-58 at 2-30 p.m. as an emergency case for pain in abdomen which started at 12 midnight. One hour before the onset of pain, the patient had a normal sexual intercourse. The pain started suddenly and was very mild, being a dull ache. It was localised to the hypogastrium. She had a stool at 12-30 a.m. and the pain was relieved. She slept again. At 3-30 a.m. the patient woke up from her sleep as the pain was felt again. It was mild but gradually became severe by 6-30 a.m. and also spread to the upper abdomen. She was now seen by her family doctor who prescribed some medicine. However, there was no relief and the pain went on increasing. It was, now, also felt in the right shoulder region. The doctor was called again at 9-30 a.m. when he gave an injection and prescribed some oral drops. By 11-30 a.m. the pain was very much worse and the patient had one vomit, after which the pain subsided a little. At this stage the patient also felt pain in left shoulder. She was seen by another doctor who advised her to go to a hospital.

Menstrual History. The patient started menstruating at the age of 14 years. Her menstrual cycles used to be irregularly irregular, scanty, but painless. Six months prior to admission her menses became regular, normal in amount, and painless (4-5/28 days). She had her last menstrual period on 18th May. It was normal and lasted for 5 days. The patient had profuse vaginal bleeding on 29th May which was promptly stopped by stilboestrol injections. She again started bleeding on 3rd June (?estrogen withdrawal bleeding). The bleeding lasted for 4 days.

On enquiry the patient stated that the couple were using contraceptives regularly.

Condition on Admission. Her B.P. was 110/70 mm. of Hg. and pulse was 120 per minute. She looked pale. The abdomen was distended. There was guarding all over the abdomen. Tenderness was present over the lower abdomen. There was rigidity over right iliac region. Signs of free fluid in peritoneal cavity, including shifting dullness, were present. Peristalsis was faintly heard. Rectal examination showed bogginess in the pouch of Douglas. On vaginal examination movements of the cervix were painful. The uterus was anteverted, normal in size and pushed to the right. There was tenderness in both the fornices and fullness in left fornix. There was no palpable mass in the fornices.

Investigations. On screening the abdomen, no gas was seen under the diaphragm and no fluid levels were seen. Her haemoglobin was 42%. Urine examination showed nothing abnormal.

The patient fainted while she was being screened. She was seen by the Gynaecological Registrar and was transferred to the Gynaecological Ward as a case of 'ruptured ectopic pregnancy.' At this stage her blood pressure was 100/70 mm. of Hg. and pulse was 136 per minute.

Operation. The abdomen was opened at about 5 p.m. by a subumbilical midline incision under general anaesthesia. The peritoneal cavity contained about 500 c.c. free blood and some blood clots. Both the tubes and the right ovary were normal. The left ovary was suggestive of ruptured

ovarian pregnancy. What appeared like the site of gestation was excised from the left ovary (a partial oophorectomy was done). The round ligaments were plicated and the abdomen closed.

The patient was given a blood transfusion of 250 c.c. which was started before operation.

The post-operative period was uneventful and the patient was discharged on 6-7-58.

Pathologist's Report. The sections show the structure of corpus luteum haematoma.

Follow-up. The patient had normal menstrual cycles after the operation. She had to be treated for endocervicitis.

Case 2: (K.E.M.H. 58/21116) Mrs. F. K., aged 23 years and married 17 days back, started getting pain in the left lower abdomen at 7 a.m. on 21-9-58. From 1 p.m. to 7 p.m. the patient travelled by a train bearing the continuous pain. On alighting from the train she felt giddy and had one vomit. Thereafter she walked home. The pain continued through the night. At 9-30 a.m. on 22-9-58 she was seen by her family doctor who did a vaginal examination and advised her to go to a hospital. The patient fainted while starting for the hospital. She was admitted to the hospital at 12 noon.

Menstrual History. The patient started menstruating at the age of 15 years. Her menstrual cycles were 6-7/30 days, regular, moderate and painless. Her last period was on 22-8-58.

On admission her blood pressure was 110/70 mm. of Hg. and pulse was 116 per minute.

Abdominal Examination. There was fullness over the lower abdomen. The lower abdomen was tender, more so in the right iliac region.

Vaginal examination revealed no mass.

The patient's haemoglobin was 36% and her W.B.C. count was 7,500/c.mm. Urine examination showed nothing abnormal.

The patient was diagnosed as a case of ruptured ectopic pregnancy.

Operation. Under intratracheal gas, oxygen and ether anaesthesia needling of the posterior fornix was done, whereupon frank blood was aspirated. The abdomen

was opened by a midline subumbilical incision 6" long. There was about 1500 c.c. of free blood in the peritoneal cavity. Both tubes and left ovary were found to be normal. A corpus luteum in the right ovary was found ruptured and was bleeding. The bleeding edges were sutured after evacuating the haematoma. The right ovary was rather low and hence its utero-ovarian ligament was plicated. The abdomen was closed after plicating the round ligaments.

There was no material that could be submitted to a histopathological examination.

A blood transfusion was started before the operation and in all 1000 c.c. of blood was given.

The post-operative period was uneventful and the patient was discharged on 29-9-58.

Follow-up. The patient had normal menstrual cycles after the operation, except for a mild premenstrual dysmenorrhoea.

Case 3: (N.W.M.H. 54/4037) Mrs. A. K., aged 30 years and having 6 previous normal deliveries, was admitted to the hospital on 14-7-54 at 2 p.m., for lower abdominal pain of about 30 hours' duration. The pain was severe since morning. The patient gave history of 5 weeks' amenorrhoea. She had undergone a laparotomy 15 years back.

On admission the patient's pulse was 100/min. and her B.P. was 105/80 mm. of Hg.

Abdominal Examination. The lower abdomen was distended and there was tenderness in both iliac regions. Muscle guarding was present, especially on the left side.

Vaginal Examination. The cervix was soft. The uterus was slightly bulky, soft and pushed anteriorly. The right fornix was very tender and a mass was suspected to be present on the right side. There was bulging of the posterior and left fornices.

The patient's red cell count was 5.18 mil./c.mm., her haemoglobin was 10.2 gm.%, and her white cell count was 14,300/c.mm.

A right-sided ruptured ectopic pregnancy was suspected but the patient was

kept under observation. Her pulse went on rising and at 6 p.m. it was 120/min., the B.P. being the same. At 7 p.m. the patient's pulse was 168/min.

Operation. At 7-30 p.m. the abdomen was opened by a right paramedian incision under general anaesthesia. The peritoneal cavity contained free blood. Both the tubes appeared to be normal. The right ovary contained a small ruptured cyst. A sac-like structure was seen free in the peritoneal cavity. There was a small haematoma in the right broad ligament. There were small superficial tears in the anterior and posterior peritoneal leaves of both the broad ligaments. It was thought that a criminal abortion might have been attempted. A subtotal hysterectomy was done with removal of the right tube and ovary.

A total of 750 c.c. of blood was administered during and after the operation.

The post-operative period was complicated by pyrexia during third and fourth weeks. The patient was discharged in good condition on 17-8-54.

Pathologist's Report. The uterus shows marked decidual change. The sections from the ovary and the sac-like structure show corpus luteum and blood clot. No products of conception were seen.

Case 4 (N.W.M.H. 54/1739). Mrs. I. D., aged 30 years, was admitted to the hospital on 30-3-54 at 8-20 p.m. for abdominal pain which started in the morning when the patient was in the lavatory. The pain started in the lower abdomen, was more on the right side and was colicky and intermittent in nature. The family doctor gave her an alkaline belladonna mixture. The pain worsened during the day, spread all over the abdomen and changed to a continuous pain. At 7 p.m. she consulted a specialist attached to the hospital who diagnosed her condition as a 'right sided ruptured ectopic pregnancy' and advised her admission into the hospital. There was no history of vomiting or fainting attacks.

Obstetric history: Preceded by a 7 months' abortion the patient had an eight months' premature delivery 6 months back, the child surviving.

Menstrual History. The patient had a normal menstrual period on 7-2-54. On

10-3-54 she started getting brownish vaginal discharge which lasted for 8 days. On 24th and 25th March the patient had vaginal bleeding resembling normal menstruation. The patient's menstrual cycles used to be normal, regular and painless.

Examination. The patient walked into the hospital and looked healthy but was markedly anaemic. Her pulse was 110/min. and temperature was 98° F. On vaginal examination the movements of the cervix were painful and the right fornix was bulging and tender.

Operation. At 9 p.m., the abdomen was opened under open ether. The peritoneal cavity contained free blood and blood clots. The left tube and ovary were normal. The right tube appeared normal. The right ovary was roughened at one spot and some blood oozed from there. It seemed that this was the site of rupture of a small cyst. The right ovary was removed. On re-examination of the right tube, a little sticky reddish discharge could be expressed from its distal end. The possibility of a tubal abortion could not be ruled out and right salpingectomy was done after some hesitation. A blood transfusion had to be started during the operation.

The post-operative period was complicated by severe distension and the wound had fat necrosis and broke down. The patient was discharged in good condition on 12-4-54.

Pathologist's Report. The ovary showed ruptured corpus luteum and haemorrhages. Haemorrhages were also seen in the fallopian tube. No products of gestation were seen.

Case 5 (K.E.M.H. 53/1319). Mrs. L. P., aged 38 years, was admitted to the surgical ward on 27-1-53 at 12-32 p.m. She complained of colicky pain in lower abdomen for the last two days.

She had 5 normal deliveries, the last one being 4 years back. Her menstrual cycles were regular and normal, the last period being 25 days back.

Her B.P. was 120/70 mm. of Hg. and pulse was 120/min. Abdominal examination showed tenderness and guarding over the lower abdomen but no rigidity. Vaginal examination revealed tenderness in both the fornices.

The patient was diagnosed as a case of peritonitis and was being treated conservatively. But her pulse went on rising and at 6 p.m. it was 160/min. while B.P. was 110/70 mm. of Hg. It was decided to do an exploratory laparotomy.

At 8 p.m. the abdomen was opened by a right paramedian incision 6" long (4" above the umbilicus and 2" below it), under intratracheal ether anaesthesia. The peritoneum was found to contain about 600 c.c. of free blood.

The incision was extended upwards and the upper abdomen was carefully searched for the source of bleeding, but in vain. Examination of the pelvic organs revealed a rupture of a small corpus luteum cyst in the right ovary. There was no active bleeding. Both the tubes and the left ovary were normal. The uterus was slightly enlarged. The right ovary was removed. The abdomen was closed after plicating the round ligaments and ligating the tubes.

Total of 750 c.c. of blood was transfused during and after the operation.

The post-operative period was uneventful and the patient was discharged on 5-2-53.

Pathologist's Report. The section from the ovary shows well formed corpus luteum and corpora albicantes.

Addendum

After this paper was submitted for publication a very unusual case of haemoperitoneum due to ruptured corpus luteum on one side, concurrent with unruptured tubal pregnancy on the other side has been reported by Eckerling and Serr. The pre-operative diagnosis was a suspected ectopic pregnancy. (Eckerling B. and Serr D. M.: *J. Obst. Gyn. Brit. Emp.*; 66, 133, 1959).

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